



Brandown Quarry, Waste & Recycling Services

Operation Compliance Monitoring 2023

Lot 90 Elizabeth Drive, Kemps Creek



**Report Number 10-1732**

Brandown Pty Ltd

Lot 90 Elizabeth Drive

Kemps Creek NSW 2178

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### Quality Management

Reference	Status	Date	Prepared	Checked	Authorised
10-1732	Revision 0	13 December 2023	Joe McNamara	Yang Liu	Yang Liu

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## 1 Introduction

VMS Australia Pty Ltd have been engaged by Brandown Pty Ltd to conduct noise compliance monitoring for Brandown's Resource Recovery Centre, General Solid Waste (Non-Putrescible) Landfill and Quarry (the Facility) located at Lot 90 Elizabeth Drive Kemps Creek (the premises) in order to assess the noise emission levels from the Facility. This report presents the findings of the noise monitoring.

## 2 Hours of Operation

The Facility operates between 6.00 am to 6.00 pm Monday to Friday and 6.00 am to 5.00 pm on Saturday.

## 3 Noise Assessment Criteria

The Environmental Protection Licence (EPL) 5186 (Condition L6.1) specifies that noise from the premises must comply with:

*"An LA10(15minutes) noise emission criterion of 45 dBA, except as expressly provided by this licence.*

*Noise from the premises is to be measured or computed at any point within one metre of the nearest affected residence or other noise sensitive areas to determine compliance with condition L6.1. 5dB(A) must be added if the noise is tonal or impulsive in character."*

Further, under Condition M9 "Requirement to monitor noise" there is a requirement to monitor noise "continually over one full working day".

## 4 Noise Monitoring Locations

Noise monitoring was conducted at the nearest residential receivers at the locations below.

- Eastern Boundary of 10 Pratten Street, Kemps Creek
- Southern Boundary of 1279 Elizabeth Drive, Kemps Creek

**Figure 1** presents the noise monitoring locations.

**Figure 1 Noise Monitoring Locations**



Image courtesy of Six Maps



## 5 Instrumentation and Measurement Procedure

The acoustic instrumentation employed during the monitoring programme complied with the requirements of AS 1259.1-1990 “Acoustics - Sound Level Meter - Non-Integrating” and IEC 61672.1-2004 “Electroacoustics - Sound Level Meters - Specifications” and carried current NATA or manufacturer calibration certificates. The schedule of noise monitoring equipment deployed during the programme and attended monitoring is presented in **Table 1**.

**Table 1 Noise Monitoring Equipment**

Instrumentation	Class/Type	Serial Number
Bruel & Kaer 2250 SLM	Class 1	3008618
Svantek SV30A Calibrator	Type 1	39481
BSWA Sound Level Meter 309	Class 2	600050
BSWA Sound Level Meter 309	Class 2	600051

In order to determine compliance with the noise limits nominated in **Section 3**, operator-attended 15-minute noise surveys were conducted on Wednesday 6 December 2023 at the nominated receiver locations.

The measurements were guided by the requirements of Australian Standard AS 1055-1997 *Acoustics - Description and measurement of environmental noise*.

A level calibration check was undertaken using an acoustic calibrator which emitted a 94 dB calibration tone at 1 KHz. The calibration check was conducted prior and after the surveys with no shift noted during the calibration process.

## 6 Operational Noise Compliance Monitoring Results

In order to determine compliance with the recommended noise limits, unattended noise loggers were deployed at the noise monitoring locations to conduct ambient noise measurements between Wednesday 6 December 2023 and Thursday 7 December 2023. The noise monitoring results and estimated noise level contribution at the monitoring locations are summarised in **Table 2**. The full set of daily noise levels are presented graphically in **Appendix B** and **Appendix C**.

In addition, an operator-attended 15-minute noise survey was conducted at each of the monitoring locations to qualify the ambient noise levels and to determine the contributed noise levels from the Facility.

**Table 2 Operational Noise Compliance Monitoring Results – Daytime Period**

Location	Measured Ambient Median LA10(15minute) from Noise Logger	Date/Start Time/Weather	Operator attended Measured Ambient LA10 (15minute)	Description of Noise Emission Typical Maximum Levels L <sub>Amax</sub>	Estimated Project LA10 (15minute) <sup>1</sup>
10 Pratten Street	52 dBA	6/12/2023 12.18 pm Wind speed: 0m/s Wind direction: NA Temp: 25°C Humidity: 53%	50 dBA	<b>Equipment engines: 35-45 dBA</b> <b>Trucks: 35-43 dBA</b> <b>Intermittent increased engine noise: 45-47 dBA</b>  Birds: 40-53 dBA Helicopter: 40-48 dBA Plane: 35-40 dBA Cicada: 46-48 dBA	43 dBA
1279 Elizabeth Drive	76 dBA	6/12/2022 1.30 pm Wind speed: 0m/s Wind direction: NA Temp: 29°C Humidity: 49%	76 dBA	<b>Quarry noise not discernible</b>  Road traffic (Elizabeth Drive): 65-75 dBA Truck Passbys: 75-94 dBA	<45 dBA

Note 1: Estimated LA10(15minute) noise level (from the quarry) at any point within one metre of the nearest affected residence.

## 7 Assessment and Findings

Estimated Facility noise contributions for each location as presented in **Table 2** are reproduced in **Table 3** and assessed against the corresponding EPL Noise Emission Criteria.

**Table 3 Project Noise Emission Assessment**

Period	Location	Project Noise Criteria	Estimated Project Noise Level Contribution	Project Noise Assessment
		LA10(15min)	LA10(15min)	LA10(15min)
Day	10 Pratten Road	45 dBA	43 dBA	Pass
	1279 Elizabeth Drive	45 dBA	<45 dBA	Pass

The project noise assessment as presented in **Table 3** demonstrates that the Facility is in compliance with Condition L6.1 of the EPL Noise Emission Criteria during operator-attended daytime noise surveys conducted on Wednesday 6 December 2023. It was further noted during the operator-attended noise surveys that Facility related noise was audible above the ambient background at 10 Pratten Street but was not discernible behind traffic noise generated from Elizabeth Drive which dominated the acoustic environment at 1297 Elizabeth Drive.

We trust you find this information to be of assistance. Should you require any further details please do not hesitate to contact us.

Yours sincerely,



JOE MCNAMARA  
Senior Consultant – Acoustics and Vibration



## Terminology Relating to Noise and Vibration

Sound Pressure	Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure.
Sound Power	Sound Power is the rate at which sound energy is emitted, reflected, transmitted, or received, per unit time. Unlike sound pressure, sound power is neither room-dependent nor distance-dependent.
Sound Pressure Level (SPL)	The sound level is the sound pressure relative to a standard reference pressure of 20µPa (20x10 <sup>-6</sup> Pascals) on a decibel scale.
Sound Power Level (SWL)	The Sound Power Level is the sound power relative to a standard reference pressure of 1pW (20x10 <sup>-12</sup> Watts) on a decibel scale. The SWL of a simple point source may be used to calculate the SPL at a given distance (r) using the following formula: $SPL = SWL - 10 \times \log_{10}(4 \times \pi \times r^2)$ Note that the above formula is only valid for sound propagation in the free-field (see below).
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s1 and s2 is given by 20 log10 (s1 / s2). The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20µPa.
A-weighting, dBA	The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.
Noise Level Indices	Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so a number of different noise indices have been defined, according to how the averaging or statistics are carried out.
Leq,T	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
Lmax,T	A noise level index defined as the maximum noise level during the period T. Lmax is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall Leq noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
L90,T	A noise level index. The noise level exceeded for 90% of the time over the period T. L90 can be considered to be the "average minimum" noise level and is often used to describe the background noise.
L10,T	A noise level index. The noise level exceeded for 10% of the time over the period T. L10 can be considered to be the "average maximum" noise level. Generally used to describe road traffic noise.
Free-Field	Far from the presence of sound reflecting objects (except the ground), usually taken to mean at least 3.5m
Fast/Slow Time Weighting	Averaging times used in sound level meters.
Octave Band	A range of frequencies whose upper limit is twice the frequency of the lower limit.
DnT,w	The single number quantity that characterises airborne sound insulation between rooms over a range of frequencies.
Rw	Single number quantity that characterises the airborne sound insulating properties of a material or building element over a range of frequencies.
Reverberation	The persistence of sound in a space after a sound source has been stopped.
PPV	The particles of a medium are displaced from their random motion in the presence of a vibration wave. The greatest instantaneous velocity of a particle during this displacement is called the Peak Particle Velocity (PPV) and is typically measured in the units of mm/s.
Hertz, Hz	The unit of Frequency (or Pitch) of a sound or vibration. One hertz equals one cycle per second. 1 kHz = 1000 Hz, 2 kHz = 2000 Hz, etc.
Acceleration	Acceleration is defined as the rate of change of Velocity of a particle over a period of time and is typically measured in the units of m/sec <sup>2</sup> .
Vibration Dose, VDV	When assessing intermittent vibration, it is necessary to use the vibration dose value (VDV), a cumulative measurement of the vibration level received over an 8-hour or 16-hour period.  The VDV formulae uses the RMS Acceleration raised to the fourth power and is known as the Root-mean-squared method. This technique ensures the VDV is more sensitive to the peaks in the acceleration levels. VDV's are typically measured in the units of m/s <sup>1.75</sup> .

# Appendix B

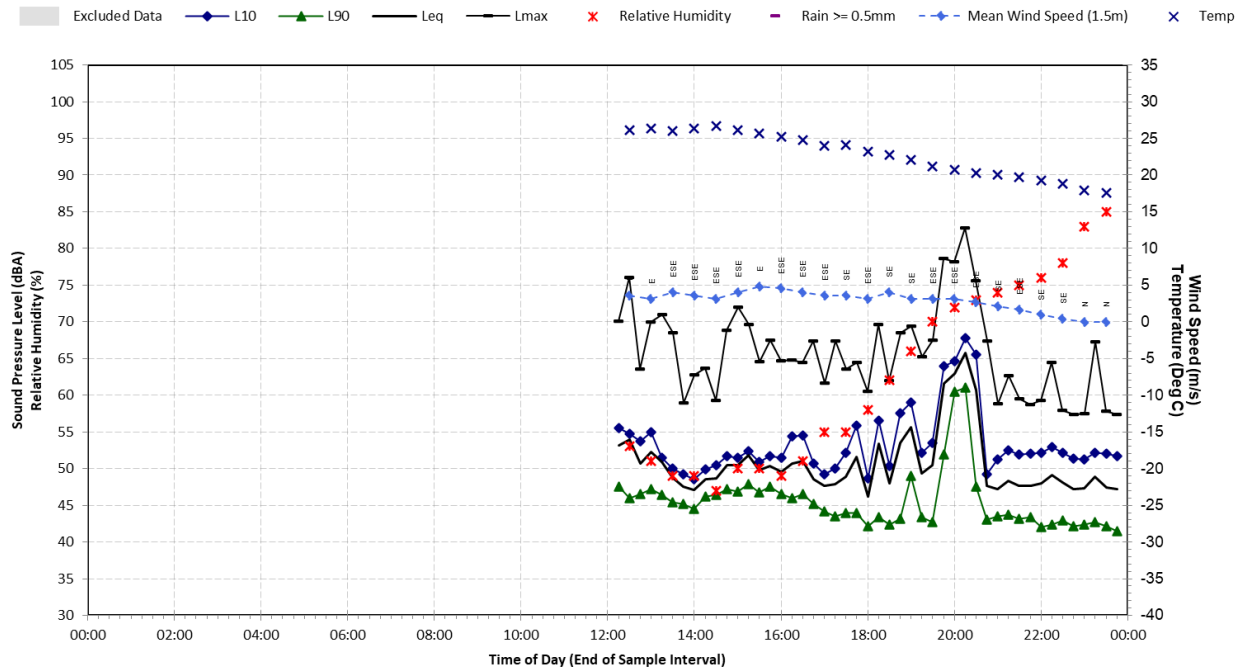
## Daily Noise Levels

### 10 Pratten Street, Kemps Creek

#### 10-1732

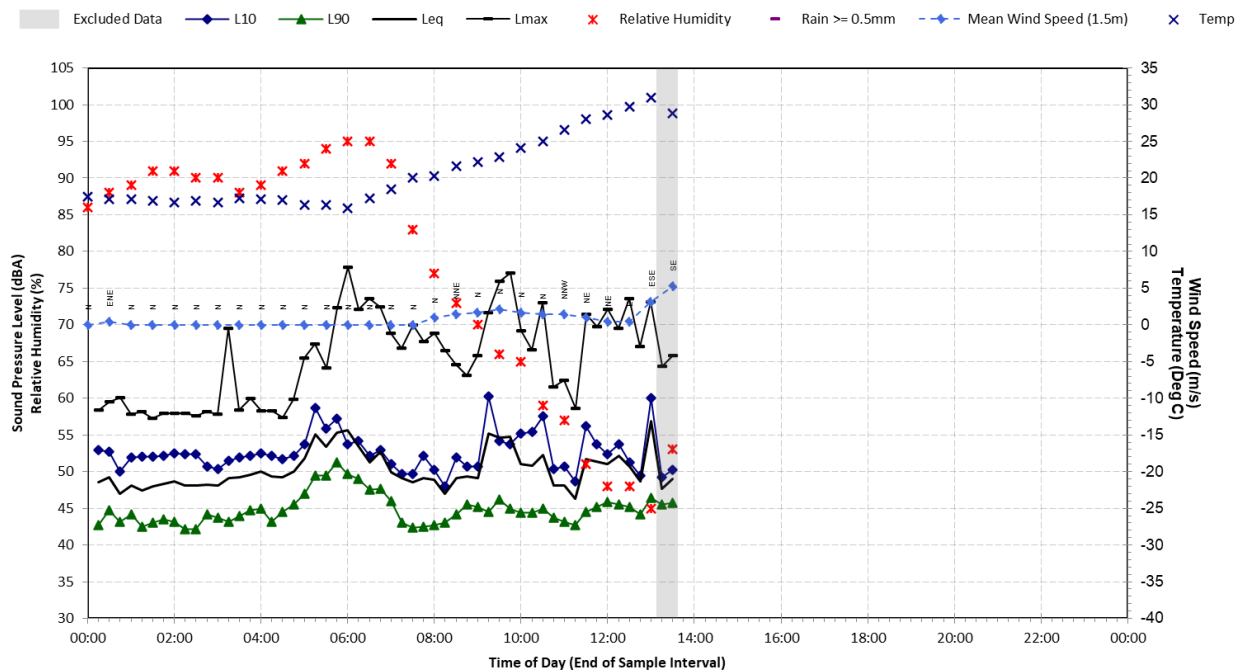
### Statistical Ambient Noise Levels

#### 10 Pratten Street - Wednesday, 6 December 2023

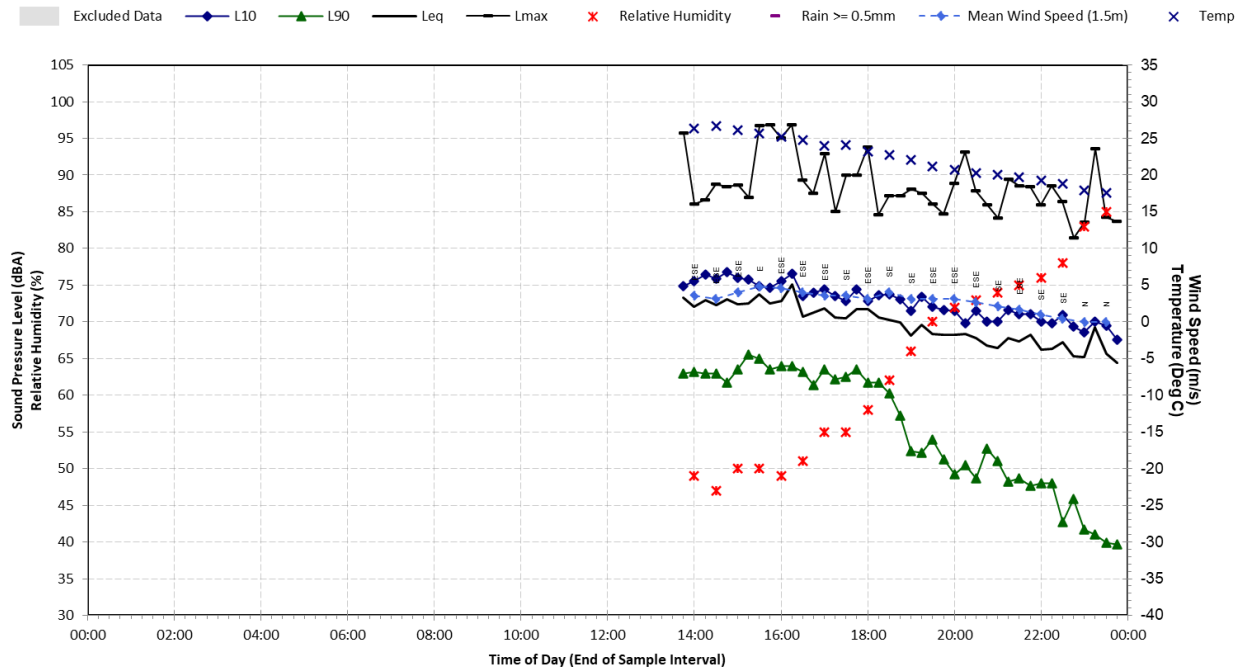


### Statistical Ambient Noise Levels

#### 10 Pratten Street - Thursday, 7 December 2023



**Statistical Ambient Noise Levels**  
**1279 Elizabeth Drive - Wednesday, 6 December 2023**



**Statistical Ambient Noise Levels**  
**1279 Elizabeth Drive - Thursday, 7 December 2023**

